

# A WATER UTILITY'S VIEWPOINT ON RECENT FEDERAL DRINKING WATER REGULATIONS

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**Abstract.** During 1996 two major federal drinking water regulations were produced. The Information Collection Rule (ICR) was issued in May and the Safe Drinking Water Act (SDWA) Amendments of 1996 were signed into law in August, 1996. This paper reviews one utility's viewpoint of these regulations and the potential impact that they may have on the drinking water community.

The ICR will provide the data base for subsequent regulations to address disinfectants and disinfection byproducts and microbial contaminants including *Giardia* and *Cryptosporidium*. The intent of this rule is excellent and most of the data will serve the drinking water community well in developing scientifically valid regulations to address these contaminants. However, many scientists and engineers believe that the methodologies for sampling and identifying *Cryptosporidium* and *Giardia* are inadequate to provide meaningful data on which to base decisions about future regulations.

The Safe Drinking Water Amendments address numerous topics. The topics that will be addressed in this paper include the requirement to regulate additional contaminants, public notification, the state revolving loan funds (SRF), the recycling of filter backwash water, operator certification, source water assessment and research.

## INTRODUCTION

The Cobb County-Marietta Water Authority (CCMWA) is a wholesale drinking water utility located in northwest Georgia. It provides water to fourteen customers in Cobb and surrounding counties which serve a population of over 550,000.

During 1996 two major drinking water regulations were promulgated at the federal level which will have a major impact on the drinking water community including the CCMWA. These regulations are the Information Collection Rule (ICR) and the Safe Drinking Water Act (SDWA) Amendments of 1996. These regulations will impact drinking water treatment technologies that will be utilized in the future. As such they will partially determine the future cost of water to our customers. The purpose of this paper is to discuss the major provisions of these regulations and describe the potential

impact on the citizens of Georgia. This information will be of value to water utility managers, consultants, regulators and Georgia's citizens. With a knowledge of these regulations utilities can begin planning for implementing these regulations and citizens can be better informed about the future quality and cost of their drinking water.

## BACKGROUND

The ICR and the SDWA Amendments of 1996 have been under development for several years. The ICR's purpose is to obtain information so that regulations can be developed to address disinfectants and disinfection byproducts and microbial contamination. The specific rules scheduled to be promulgated based on the data collected under the ICR are the Disinfectant/Disinfection Byproduct Rule and the Enhanced Surface Water Treatment Rule. A major event which has increased the sense of urgency in developing these regulations was the *Cryptosporidium* outbreak in Milwaukee, Wisconsin in 1993. That outbreak resulted in the death of 104 people and illness for 370,000 additional people. (Pontius, 1993)

The SDWA Amendments address many issues that impact the drinking water community. It was developed to update and improve the Safe Drinking Water Act, originally legislated in 1974, and amended several times since then. The latest amendments provide a more practical and realistic approach to providing safe drinking water than earlier versions. It also addresses some issues that have become of greater concern in recent years including the problems faced by smaller utilities, watershed protection and funding for drinking water plant improvements.

## INFORMATION COLLECTION RULE

The Information Collection Rule (ICR) requires larger utilities (those serving populations greater than 50,000 for ground water and 100,000 for surface water) to conduct an eighteen month monitoring program to develop data on a wide variety of disinfectants, disinfection byproducts (DBPs) and microbial contaminants. Based on total organic carbon (TOC) concentrations in their raw water, the rule will also require

some utilities to conduct treatment studies to evaluate the use of granular activated carbon (GAC) or membranes to remove DBP precursors.

The intent of this rule is excellent. It is based on the reality that the same disinfectants which are necessary to kill pathogenic organisms also create disinfection byproducts which may have significant health effects. To produce the safest possible drinking water, an appropriate balance between the use of disinfectants and the risk of microbial contamination must be reached.

**Disinfection Byproducts and Related Monitoring:** The ICR requires large plants to monitor for standard water quality parameters (WQPs), TOC, UV<sub>254</sub>, bromide, ammonia and disinfectant residual. The DBPs to be monitored include total trihalomethanes (TTHMs), total organic halides (TOXs), total haloacetic acids (THAAs), haloacetonitriles (HANs), chloropicrin (CP), halo ketones (HKs) and chloral hydrate (CH). In addition, plants which use disinfectants other than or in conjunction with chlorine have additional monitoring requirements.

The monitoring requirements in this section are very comprehensive. However, given the large number of disinfection by-products and their possible health impacts, it is appropriate that a program of this scope be conducted. It may be possible to determine the relationships between these compounds and their health effects with the data from this program. Our utility believes this level of effort is appropriate to the significance of the problem.

**Microbiological Monitoring Requirements:** The rule requires large plants to monitor for *Cryptosporidium*, *Giardia*, total culturable viruses, total coliforms (TC) and fecal coliforms (FC) or *Escherichia coli* (*E. coli*).

The monitoring requirements in this section address pathogenic organisms that are severe health threats to the public. Both *Cryptosporidium* and *Giardia* have been identified as the infectious agents in several occurrences of water-borne disease in the United States. The methodologies for all of these parameters except *Cryptosporidium* and *Giardia* have been demonstrated to have acceptable confidence levels. However, recent laboratory evaluations for *Cryptosporidium* analyses show recovery rates from 5 to 21 per cent from samples of known concentrations. Despite the low recovery rates, the EPA believes that the large number of samples and their geographic diversity will contribute to the development of a meaningful data set. The methodology for *Giardia* also results in poor recovery rates. However, the methodology is not of as great a concern as the *Cryptosporidium* methodology because *Giardia* is easier to remove by filtration.

This utility believes that it is premature to conduct a nationwide monitoring program for *Cryptosporidium* and *Giardia* when the methodologies have such low recovery rates. There is a high probability that the data obtained from this

study will be of little use and that once the methods are refined to higher recovery rates or that new methods are developed, it will be necessary to conduct the study again. A false sense of security may also be developed if *Cryptosporidium* or *Giardia* is not detected using current methods. When recovery rates are refined to a more accurate reflection of the actual content of the water and *Cryptosporidium* or *Giardia* is detected, conflicting data from the earlier study could erode public confidence in the utility and regulators.

**DBP Precursor Removal Studies:** The rule requires large utilities to monitor the TOC in their raw water. If the annual average concentration is above 4.0 mg/l, they will be required to conduct bench- and/or pilot-scale testing for granular activated carbon or membrane technology to reduce DBP precursor levels. The rule allows utilities to conduct joint studies or to contribute funds to a cooperative research effort.

This utility believes that these studies may provide worthwhile information on the effectiveness of these two technologies on a wide variety of raw waters. These two approaches have long been recognized as effective in reducing precursor concentrations; however, both are very expensive. With additional data, utilities will be better able to evaluate the applicability of each of these approaches to their unique circumstances.

#### SAFE DRINKING WATER ACT AMENDMENTS OF 1996

The Safe Drinking Water Act Amendments of 1996 address many issues which have been under discussion in the drinking water community for many years. Because of the large number of points addressed in the amendments, only a selected number that are of particular interest to this utility will be addressed.

**Regulation of Unregulated Contaminants:** The Safe Drinking Water Act of 1986 required EPA to regulate 25 new contaminants every three years. The Amendments of 1996 require EPA to determine every five years whether a minimum of five new contaminants should be regulated. To be regulated a contaminant must meet the following criteria: (i) the contaminant may have an adverse effect on the health of persons; (ii) the contaminant is known to occur or there is a substantial likelihood that the contaminant will occur in public water systems with a frequency and at levels of public health concern; and (iii) in the sole judgment of the Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by public water systems.

The Amendments of 1996 are much more realistic in determining if new contaminants should be regulated. The regulations require scientific studies to determine if a contaminant poses a health risk and if it is found in drinking water supplies. This approach should result in contaminants being regulated only when necessary and when justifiable.

**Public Notification:** The previous Act required notification of the public by public water systems if they failed to comply with a maximum contaminant level (MCL) in their finished water. The current Act also requires the USEPA to prescribe the manner, frequency, form and content for issuing public notification. In addition, the Act requires States to provide an annual report on violations of primary drinking water standards. Finally the Act requires utilities to provide consumer confidence reports including information on regulated and unregulated contaminants to their customers once a year.

These requirements are an excellent addition to the Act. The annual report by the States on violations will allow the public to be aware of any risks associated with their drinking water. The consumer confidence reports will show the consumers the extent of monitoring which is conducted on drinking water. Utilities can also use the report to inform their customers about changes in treatment or other information.

**State Revolving Loan Funds:** This provision is a new addition to the SDWA. The Act requires states to set up a revolving loan fund. Federal funds have been authorized to be provided to the States based on an allocation formula. The funds can only be used for projects which enhance the ability of a utility to meet the requirements of the Safe Drinking Water Act. The Act authorizes nationally for \$600 million for fiscal year 1994 and \$1 billion annually for fiscal years 1995-2003. The Act makes provisions that any funds not appropriated in a given year are authorized to be appropriated in a subsequent fiscal year. This provision allows the funds authorized for appropriation in 1994 and 1995 to be appropriated in a subsequent fiscal year.

This program is an excellent addition to the SDWA. Georgia has had a state revolving loan fund for several years. The federal Act will provide additional money to fund the program. Since the Act may lead to additional treatment requirements in the future, this provision will help provide utilities with the financial ability to implement those requirements.

**Recycling of Filter Backwash:** This issue is a new addition to the SDWA. The Act requires the USEPA to promulgate, within four years, a regulation to govern recycling of filter backwash water unless the proposed Enhanced Surface Water Treatment Rule (ESWTR) has already addressed the issue by that time.

Recycling of filter backwash water has been done by utilities for many years for water conservation purposes. However, the recycling of filter backwash water is now of concern because of the possibility of recycling *Cryptosporidium* within the treatment plant and increasing the possibility of contamination of the finished water. In Georgia, the Environmental Protection Division (EPD) has encouraged utilities to submit requests for discharge permits for their backwash water. This utility believes that this issue needs to

be addressed. As utilities attempt to meet stricter water quality requirements, the impact of recycle streams will become more significant. This utility also believes that in most cases backwash water should be treated whether it is recycled or discharged to a receiving stream.

**Operator Certification:** This is another new issue to the SDWA. The act requires the USEPA to publish guidelines for the certification of operators. Two years after the guidelines are published, the states are required to have an operator certification program or lose some of their USEPA funding.

This requirement is meant to ensure the qualification of personnel operating drinking water plants. There have been a few recent instances around the country where the qualification of the operational staff became an issue. This provision is meant to address such problems. In Georgia there has been an operator certification program for over twenty-five years. This utility strongly supports this provision. The public must be assured that properly trained personnel are responsible for the quality of their drinking water.

**Source Water Assessment and Source Water Petition Program:** These items are new to the SDWA. The Source Water Assessment program requires the USEPA to publish guidance to the States for developing a source water protection program within each State's boundaries. The Source Water Petition Program allows States to develop a program under which an owner or operator of a community water system may submit a source water protection partnership petition to the State. The petition requests that the State assist in the local development of a voluntary partnership to reduce the presence of contaminants in the source water. Funding for the States in the amount of \$5 million per year for fiscal years 1997-2003 has been appropriated for the Petition Program.

These programs are excellent additions to the SDWA as initial steps to protect source water. As development continues in the country's watersheds, drinking water sources will become more heavily impacted. Programs designed to protect these watersheds are essential. However, the issue of property owners' rights to develop their property versus the right of the public to have a protected drinking water source must still be resolved. Realistic and effective methodologies to prevent non-point source pollution are essential to the success of this effort. If programs of this type are not successful, the consumer will be required to pay higher costs for water treatment.

**Drinking Water Research:** This item is new to the SDWA. The Act authorizes the USEPA to spend up to \$26.6 million per year for fiscal years 1997-2003 for research, in addition to any other amounts authorized in other portions of the Act. The SDWA also requires the development of a strategic plan for the research to insure that it is of the highest quality and does not duplicate other research being conducted by the USEPA.

The addition of this section to the Act is outstanding. Given the complexities of providing safe drinking water to the

public, it is essential that adequate and meaningful research be conducted. The problems associated with the representative sampling and analysis for *Cryptosporidium* is just one example of an area where additional research is needed.

## SUMMARY

The Information Collection Rule and the Safe Drinking Water Act Amendments of 1996 will have significant impacts on the drinking water community in the years to come. Overall these regulatory efforts will have many beneficial results.

The ICR will obtain the information needed to develop the Disinfectant/Disinfection Byproduct Rule and the Enhanced Surface Water Treatment Rule. This information will provide a national data base on which to make informed decisions. However, the sampling and analytical methods for *Cryptosporidium* and *Giardia* are still in developmental stages and that data will be of marginal value.

The SDWA Amendments of 1996 revises the basic drinking water act which has been in place since 1974. The changes make it much more realistic and address several major concerns in the drinking water community. The requirement to regulate contaminants based on scientific data and occurrence in drinking water supplies is a more reasonable step than the previous amendment which required a specific number of contaminants be regulated during a specific period.

The efforts to address funding, source water protection and research will be very beneficial.

## LITERATURE CITED

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